

CLAIMS

1. A method of transmitting signals in a CDMA cellular radio transmission system, comprising the following steps:

modulating a source signal with a channelization code having a length corresponding to a spreading factor to form a signal intended for transmission over a radio link,

characterized by

adapting the spreading factor for use in said modulation step.

2. The method according to claim 1, characterized by the further steps of determining the availability of channelization codes in the system, and adapting the spreading factor on the basis of the determined availability of channelization codes.
3. The method according to claim 1 or 2, characterized by the further step of signalling the adapted spreading factor over the radio link.
4. The method according to one of claims 1 to 3, characterized by the further steps of encoding the source signal, prior to modulation, with a forward error correction (FEC) code rate, and

adapting the FEC code rate.

5. The method according to claim 4, characterized in that the FEC code rate is adapted in accordance with the determined availability of channelization codes and/or the adapted spreading factor.
6. The method according to claim 4 or 5, characterized by the further step of signalling the adapted FEC code rate over the radio link.
7. The method according to one of claims 1 to 6, characterized in that said adaptation step for the spreading factor and/or code rate is carried out in accordance with a measurement of at least one of the parameters of channel quality, interference, system capacity, transmit power or link quality.
8. The method according to claim 7, characterized in that said measurement is reported from a receiver to a transmitter on request and/or periodically.
9. The method according to one of claims 1 to 8, characterized in that said adaptation step for the spreading factor and/or FEC code rate is carried out on an individual basis for at least one user of the system.
10. The method according to one of claims 1 to 9, characterized in that said adaptation step for the spreading factor and/or FEC code rate is carried out on the basis of a comparison of an estimated system parameter value calculated for the current code rate and/or spreading factor with a predicted system parameter value calculated for code rate and/or spreading factor after a potential change.
11. The method according to one of the claims 1 to 10, characterized in that said adaptation step for the spreading factor and/of FEC code rate is carried out in accordance with an adaptation of the information bit rate of the source signal.
12. The method according to one of the claims 1 to 11, characterized in that said adaptation step for spreading factor and/of FEC code rate is carried out in accordance with the properties of a retransmission algorithm.

13. A method of receiving signals in a CDMA cellular radio transmission system, comprising the following steps:

receiving a modulated signal transmitted over a radio link,

characterized by

determining the spreading factor used in an adaptive manner for modulating the received signal, and

demodulating the received signals using the determined spreading factor with a channelization code having a length corresponding to the spreading factor.

14. The method according to claim 13, characterized by the further steps of determining the forward error correction (FEC) code rate used for encoding the received signals, and
decoding the demodulated signals using the determined FEC code rate.
15. The method according to claim 13 or 14, characterized in that the determination step includes receiving a transport format indicator indicating the spreading factor and/or FEC code rate.
16. The method according to claim 15, characterized in that said determination step includes demodulating the transport format indicator in advance and for each frame of received signals.
17. A transmitter in a CDMA cellular radio transmission system, comprising:
modulation means (15) for modulating a signal from a source (10) with a channelization code having a length corresponding to a spreading factor to form a signal intended for transmission over a radio link,

characterized by

a control unit (13) for adapting the spreading factor for use in said modulation means (15).

18. The transmitter according to claim 17, characterized in that said control unit (13) receives information on the availability of channelization codes in the system and adapts the spreading factor on the basis of said information.
19. The transmitter according to claim 18, characterized by signalling means (14) for signalling the information on the availability of channelization codes to a receiver.
20. The transmitter according to claim 18 or 19, characterized by further comprising a multiplexer (14) for inserting a transport format indicator into the signal to be transmitted.
21. The transmitter according to one of claims 17 to 20, characterized by further comprising an encoder (11) for encoding the signal from the source (10) with a forward error correction (FEC) code rate and in that the control unit (13) adapts the FEC code rate.
22. The transmitter according to one of claims 17 to 20, characterized by further comprising a source encoder (11) with multiple modes which are adjustable by the control unit (13).
23. The transmitter according to one of claims 17 to 22, characterized by further comprising power control means (13) for controlling the transmit power in accordance with the adapted spreading factor and/or FEC code rate.
24. The transmitter according to one of claims 17 to 23, characterized in that said transmitter is embodied as a base station.
25. A receiver in a CDMA cellular radio transmission system, comprising:

a receiving unit (17) for receiving a modulated signal transmitted over a radio link,

characterized by

means (19, 23) for determining the spreading factor used in an adaptive manner for modulating the received signal, and

a demodulator (18) for demodulating the received signals using the determined spreading factor with a channelization code having a length corresponding to the spreading factor.

26. The receiver according to claim 25, characterized by further comprising:

means (19, 23) for determining the forward error correction (FEC) code rate used for encoding the received signal, and

a decoder (21) for decoding the demodulated signal using the determined FEC code rate.

27. The receiver according to claim 25 or 26, characterized in that the means for determining include a control unit (23) for receiving a transport format indicator indicating the spreading factor and/or the FEC code rate.

28. The receiver according to claim 27, characterized in that the control unit (23) is adapted to demodulate the transport format indicator in advance and for each frame of the received signal.

29. The receiver according to one of claims 25 to 28, characterized in that said transmitter is embodied as a mobile station.